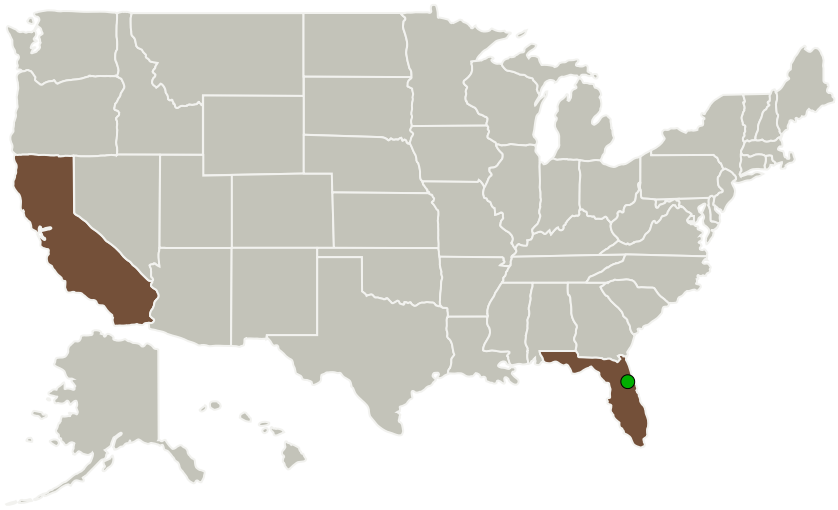
Task-Specific Asteroid Simulants for Ground Testing, Phase I

Completed Technology Project (2015 - 2015)

Project Introduction

We will design, prototype, and test a variety of asteroid simulants needed to validate most aspects of asteroid ISRU processes. These include physical simulants for excavation, transfer, and preparation (including comminution); chemical/mineralogical/volatile simulants for processing tests such as volatiles extraction, metals extraction, and oxygen production; and simulants to evaluate scientific and commercial instrumentation. The need for task-specific asteroid simulants is illustrated by the history of ill-designed and ill-applied lunar simulants, and current practices for asteroid simulants, which are marked by ad-hoc improvisation that frequently results in an inability to compare results among experiments or reliably repeat experiments for confirmation.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Deep Space Industries, Inc.	Lead Organization	Industry	San Jose, California
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

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Primary U.S. Work Locations	
California	Florida

Project Transitions

June 2015: Project Start

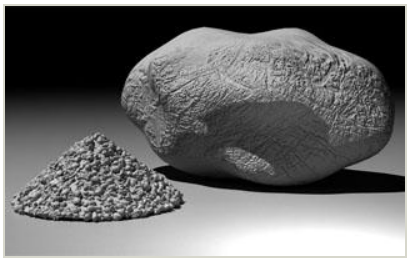
December 2015: Closed out

Closeout Summary: Task-Specific Asteroid Simulants for Ground Testing, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139782)*

Images



Briefing Chart Image
Task-Specific Asteroid Simulants for Ground Testing, Phase I
(https://techport.nasa.gov/image/129101)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Deep Space Industries, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
John S Lewis

Co-Investigator:
John R Lewis

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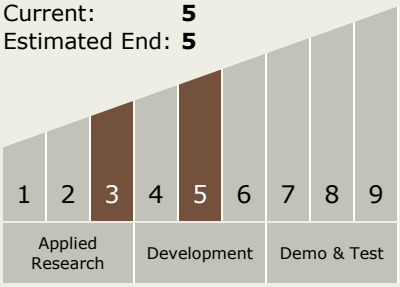
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.1 In-Situ Resource Utilization
    - TX07.1.3 Resource Processing for Production of Mission Consumables

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System